NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC BASIN AREA
CONSERVATION PRACTICE STANDARD

WATER-HARVESTING CATCHMENT

(Number)
CODE 636

DEFINITION

A facility for collecting and storing precipitation.

SCOPE

This standard applies to the sealing of watersheds or contributing areas to increase, collect, and store runoff water for future use. It also applies to simple curbs and diversions constructed to collect and store runoff from such high runoff areas as rock outcrops or existing paved or impervious areas.

PURPOSE

To provide water for livestock, fish and wildlife recreation, or other purposes.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to areas where there is a need for additional water. The contributing area must have a potential to furnish the quantity and quality of water required for the intended use.

PLANNING CONSIDERATIONS

Effects of trapping or catching of water on surface and ground water. Factors include changes in evaporation, timing of releases from the catchment, and the impact of the type of catchment on surface water versus ground water decreases.

Potential improvement in surface water quality resulting from flow reduction's contribution to reducing erosion and sediment yield. Consider the size of the harvest area and the impact of associated structures, such as sediment traps.

Effects of reduced dilution water on water quality factors such as dissolved substances, waste assimilation capacity, and dissolved oxygen.

Effects of loss of ground water dilution and the reduction of input of dissolved salts and chemicals on ground water quality.

DESIGN CRITERIA

Each water-harvesting catchment must be designed according to a plan suited to the water requirements and the site conditions. The following points shall be considered in designing a water-harvesting catchment:

1. Quality and quantity of water required for the planned use.
2. Probability of filling the storage area or basin.
3. Area of apron needed for the required water yield.
4. Materials and method required to insure that the apron is smooth and impervious. Earth, treated earth, wax, rubber, plastic, asphalt, concrete, steel, and other such suitable materials are acceptable for this purpose.
5. Provisions for diverting foreign runoff from the catchment area to prevent damage and excessive sedimentation.
6. Provisions for protecting the apron from damage by runoff in excess of that needed to maintain the design capacity of the conveyance system. An overflow pipe or an emergency spillway can be used.
7. Need for a sediment trap between the apron and the storage basin.
8. A storage basin that is adequate in size, impermeability, and durability for the required water. Earth basins and tanks of steel, concrete, Butyl rubber and similar facilities are acceptable. Earth dams must have at lest 1 ft of freeboard (25 cm) above design high water. All storage basins must be protected from 10-year-frequency storms. An overflow device must be installed in all storage basins.

9. Need for evaporation repressants, such as rock filling and floating covers.
10. Adequate protection to prevent damage from weather, animals, vandals, wildlife, and traffic. Installation of a fence, Pacific Basin standard, Fence (382), may be necessary.
11. Provisions for maintaining the apron, the conveyance system, the overflow device, and the storage basin.
12. Concrete storage basins will be designed in accordance with requirements listed in Waste Storage Facility (313).
13. Earthen storage basins will be designed in accordance with Pacific Basin standard, Pond (378).

PLANS AND SPECIFICATIONS

Plans and specifications for constructing water harvesting catchment shall describe the requirements for applying the practices for achieving its intended purposes.

Construction plans shall include the location and dimensions of the catchment, length and size of any pipes and open conduits, material requirements, location of outlets, and location of appropriate fittings, (valves, risers, thrust blocks, etc.).

Where embankment construction is a feature of the practice, results of geologic investigation (USCS), required compaction results (or method) and soil moisture requirements will be included in the plans. Information for any spillways, anti-seep collars, revegetation following guidance provided in the Pacific Basin standard, Critical Area Planting (342) shall also be included in the drawings and/or specifications provided.

When the water harvesting catchment uses steel reinforced concrete, or steel reinforced concrete masonry unit construction, the plans shall show layout of the structure(s), quantities of the materials specifically to include rebar locating details and a rebar schedule.

If lining material is required for the catchment, the drawings and/or specifications will reflect the material requirements, (composition, thickness, joining methods, connection details, etc.).

Construction plans for water harvesting catchment pipelines may be incorporated into plans for Pacific Basin standards including, Irrigation System, Microirrigation (441), Irrigation System, Sprinkler (442), Pipeline (516), Water Facility (614), Waste Utilization (633), or Irrigation Water Management (449).

Plans shall be prepared in accordance with the NRCS Engineering Field Handbook, Chapter 5 "Preparation of Plans."

OPERATION AND MAINTENANCE

Re-seal bottom with appropriate material in the event leakage occurs. Re-establish vegetation as soon as practical on bare areas that contribute water to the catchment. Control erosion and noxious weeds in and around the catchment and surrounding watershed. Inspect the facility and all appurtenances periodically to insure sound condition and operable, especially bypass pipes and spillways.

REFERENCES

1. USDA NRCS National Engineering Handbook, Part 640 (Technical Release 62)
2. USDA NRCS National Engineering Handbook, Part 650, Engineering Field Handbook
3. USDA NRCS SECTION IV of the Field Office Technical Guide